

PORK QUALITY

Title: Interaction of Non-Meat Ingredients in Enhanced Pork Loin Chops
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Abstract: Fresh, vacuum-packaged pork loins were obtained from a commercial pork processor and used in a five-part study to examine the effects of salt, sodium phosphates, sodium lactate, potassium lactate and sodium diacetate on the chemical, color, sensory and package level levels of pork chops stored 0, 7, 14, 21 and 28 days. The first experiment examined the effects of salt (0, 0.25, 0.50, 0.75, 1.00, 1.25, 1.50, 1.75, 2.00%) and sodium phosphate (0, 0.1, 0.2, 0.3 and 0.4%) in the final product. The second experiment as designed as experiment 1 except a more soluble sodium phosphate was used to understand how sodium phosphate type affects these attributes. In the third experiment, salt was standardized at .75% and sodium phosphate (0, 0.1, 0.2, 0.3 and 0.4%) and sodium lactate (0, 1, 2, 3 and 4%) differed. In the fourth experiment, salt was again standardized at .75% and sodium phosphate (0, 0.1, 0.2, 0.3 and 0.4%) and potassium lactate (0, 1, 2, 3 and 4%) were added. In the fifth experiment, salt and potassium lactate were standardized at .75% and 2%, respectively and sodium phosphate was evaluated at 0, 0.1, 0.2, 0.3 and 0.4% and sodium diacetate were used at 0, 0.05, 0.10, 0.15 and 0.20%. Results from the Experiment 1 showed that salt levels should not exceed 1% and sodium phosphate levels should not exceed .2% in enhance pork loin chops to maximize sensory flavor and texture attributes while being able to maintain high water holding capacity. Experiment 2 used a more rapid acting, soluble phosphate that is more commonly used in enhanced pork products. Results from Experiment 2 indicated that the interaction of salt and sodium phosphates were similar in Experiment 1 and 2; however, processed meat-like bite was greater due to the addition of the different sodium phosphate in Experiment 2. Experiment 3 examined the interaction of sodium lactate and sodium phosphates on meat chemical and sensory characteristics. Sodium lactate addition tended to not impact water holding capacity measurements and cooked pork lean/brothy, but increased salt basic tastes. The combination of sodium phosphates and sodium lactate did not appear to have alter the functionality or enhance the functionality of the individual ingredients; in other words, the ingredients acted as previously reported in the literature and there were no synergistic effects when they were used in combination. Experiment 4 examined the effect of potassium lactate and sodium phosphates on pork loin chop chemical, sensory and color characteristics. Results from Experiment 4 showed that the addition of sodium or potassium lactate had minimal effects on sensory characteristics of pork loin chops. It was interesting that potassium lactate had a greater effect on increasing the level of processed meat-like bite than sodium lactate. Experiment 5 looked at the addition of sodium diacetate in combination with sodium phosphates. Sodium diacetate is used as an antimicrobial agent in enhanced pork chops. While sodium diacetate is the salt form of acetic acid, the pH of the ingredient is lower than either sodium or potassium lactates. This lower pH could decrease water holding capacity, increase package purge, lighten color and result in off-flavors such as sour in enhanced pork loin chops. In experiment 5, the addition of up to 0.1% sodium diacetate did not affect the sensory and color characteristics of enhanced pork loin chops. Using this information in combination with the color, purge and other sensory information will allow product development personnel to make more informed decisions on what levels of salt and sodium phosphates to use in their enhanced pork products.

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